

SWARD DIVERSITY OFFERS BENEFITS FOR ALL

Sward diversity can offer significant advantages to all dairy farmers, through grazing or conserved forage, and whether you are high input, spring block calving or organic.

This is the message from Francis Dunne of Field Options, who says the benefits can include more consistent yields, better quality, and greater resilience of performance, but only if mixtures have been formulated through sound research and with the necessary expertise.

He says diversity should not be driven by how many different species are included but should instead be about creating the optimum balance that will improve field performance, enhance soil health and put extra margin on the bottom line.

“The blunderbuss approach may well be counter-productive, whatever your situation,” he says. “The best solution may not be all that diverse but will include components that each have a role and will deliver defined benefits in any particular system.”

Field Options draws valuable knowledge from its grass mixture trials based at the Crop and Environment Research Centre (CERC) at Harper Adams University in Shropshire. Now

into a third cycle, the latest sown plots are testing more diversity than ever before, including mixtures with different legume options, herbs such as plantain, chicory and yarrow, and some grass species offering alternative characteristics to ryegrass. The data generated is helping to determine the formulation of new mixtures and shape the direction of future research.

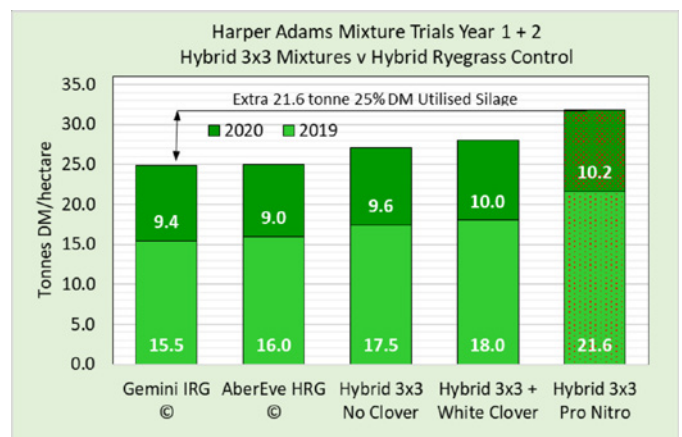
“Our overriding aim is to improve the performance that is possible from forage,” explains Francis Dunne. “We’re selecting varieties from the top 20% of the Recommended List, from a wide range of breeders, and blending these to create combinations with the greatest potential. We’re looking at dry matter yield and feed quality, throughout each season, and over five production

years, so we’re going as far as possible to reflect commercial reality and to demonstrate what can be grown to replace bought in protein and energy.”

Cutting mixtures

A good proportion of the specialist silage leys currently grown on UK dairy farms are short term and often based primarily on Italian ryegrass. These have been popular because they fill clamps but results from the Field Options trials are challenging this established thinking.

“We have short-medium term mixtures based on new hybrid ryegrasses and top performing perennial ryegrasses that are out-yielding Italian ryegrass even in the 1st year, and – because they are



slower to head – can average 1.0MJ/kg DM more energy across all cuts.

“The addition of clover to this mixture boosts production potential further through greater drought tolerance. The response to clover was most noticeable in dry seasons, with red clover generating the most significant increase in yield but also boosting crude protein from 14.5% to 17.2%. Well established clover also creates the opportunity to reduce use of nitrogen fertiliser.

“This is one of the more basic examples of sward diversity but illustrates very well the progress that is possible.”

Medium term dual purpose

The benefits of diversity with legumes are also illustrated in longer term mixtures, with the data from the Field Options trials becoming more compelling into the fourth year and beyond.

The current trials programme compares the 5-6 year dual purpose mixture Grassmaster

Continued >



Field Options is measuring the value of sward diversity and developing high performance mixtures at its trials site in Shropshire.



Francis Dunne says sward diversity offers all dairy farmers benefits but mixtures must be based on the best varieties and should ideally have been proven in trials.

HS with and without white clover, and with red clover. All are compared with a control variety of perennial ryegrass.

"In the last trial we identified this mixture, without clover, produced an extra tonne of dry matter/hectare over the perennial ryegrass control," adds Francis. "Average annual DM yield increased by another 1t/ha by adding white clover and a further 1.5t/ha by adding red clover. Maximum response from adding clover produced the equivalent of 10.4t/ha/year of 25% DM silage.

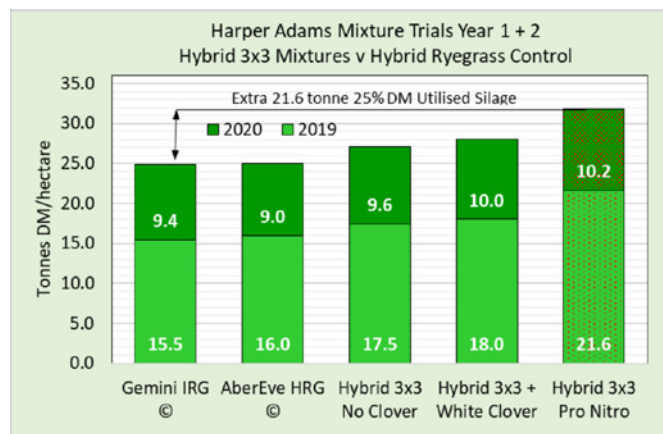
"That's a lot of extra forage and considerable savings in bought-in feeds, particularly when you factor in the higher protein content resulting from the clover."

The current trials cycle includes an option of this white clover-based mixture with rhizobium-treated white clover. This enhanced the clover establishment and nitrogen fixing to produce an extra 1.2tDM/ha per year in the first two seasons.

The current trials cycle includes an option of this white clover-based mixture with rhizobium-treated white clover. This enhanced the clover establishment and nitrogen fixing to produce an extra 1.2tDM/ha per year in the first two seasons.

Long term mixtures

Again, the trials make comparisons between a control perennial ryegrass and mixtures with and without white clover, and with the addition of some red clover. In the case of the long-term mixtures, there are also options that include herb species.



A familiar pattern is evident in the latest results, with mixtures with white clover outperforming the control perennial ryegrass significantly, and then the addition of red clover adding a

further level of enhanced performance. Production goes up a further level with the inclusion of herbs, strengthening the argument in favour of the right kind of diversity.

"We're using the best available varieties of grazing plantain and chicory, and these add a new dimension to the sward," says Francis. "In the dry 2020 season, our Preference Herbal mixture yielded an extra 1.4tDM/ha more than the standard Preference without impacting significantly on forage quality. This equates to an additional 2,800 litres/ha of milk production."

The Field Options trials also include a block of plots which get no nitrogen fertiliser, and these also demonstrate advantages of sward diversity. Several mixtures, including the Preference long-term dual purpose ley referenced earlier, in the second season, consistently outyielded the straight perennial ryegrasses control that had received 250kgN/ha. This demonstrates particular value of herbs and clover in low input and organic systems.

"Sward diversity works most effectively when we combine different plant types with complementary growth rhythms, whilst factors such as the nitrogen-fixing capabilities of legumes also have an impact," adds Francis. "It's about finding that compatibility and creating a balance of species that will deliver consistent season-long performance – over and above what is possible with less diversity – and we can only confirm that through dedicated research.

"We're finding there is great potential for diverse swards to deliver more consistent performance for all types of dairy system. It's even possible to meet stewardship specifications without compromising performance, provided mixtures include the best genetics available."

When it comes to establishment of diverse species swards, the advice from Field Options is to sort

any weed issues in advance and sow a complete mixture in one hit. Over-seeding clovers or herbs into an established ley has its challenges and consistent results are hard to achieve.